# DINION HD 720p60

NBN-733

BOSCH

**en** Installation Manual

use IP
www.use-ip.co.uk
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# 1 Safety

## 1.1 Safety precautions

**DANGER!**
High risk: This symbol indicates an imminently hazardous situation such as "Dangerous Voltage" inside the product.
If not avoided, this will result in an electrical shock, serious bodily injury, or death.

**WARNING!**
Medium risk: Indicates a potentially hazardous situation.
If not avoided, this could result in minor or moderate bodily injury.

**CAUTION!**
Low risk: Indicates a potentially hazardous situation.
If not avoided, this could result in property damage or risk of damage to the unit.

**CAUTION!**
The Low Voltage power supply unit must comply with EN/UL 60950. The power supply must be a SELV-LPS unit or a SELV - Class 2 unit (Safety Extra Low Voltage - Limited Power Source).

**CAUTION!**
The camera must be connected to earth.

## 1.2 Important safety instructions

Read, follow, and retain for future reference all of the following safety instructions. Follow all warnings on the unit and in the operating instructions before operating the unit.

1. Clean only with a dry cloth. Do not use liquid cleaners or aerosol cleaners.
2. Do not install unit near any heat sources such as radiators, heaters, stoves, or other equipment (including amplifiers) that produce heat.
3. Never spill liquid of any kind on the unit.
4. Take precautions to protect the unit from power and lightning surges.
5. Adjust only those controls specified in the operating instructions.
6. Operate the unit only from the type of power source indicated on the label.
7. Unless qualified, do not attempt to service a damaged unit yourself. Refer all servicing to qualified service personnel.
8. Install in accordance with the manufacturer's instructions in accordance with applicable local codes. Use only attachments/accessories specified by the manufacturer. Equipment change or modification could void the user's guarantee or authorization agreement.
9. Connect the earth terminal of the camera ⏚ to the system earth of the installation to ensure correct safety and EMC/RFI protection.

# 1.3 Connection in applications

**Grounding**

Safety (power) ground is indicated by the symbol ⏚ on the rear of the camera.
U.S.A.: - section 810 of the National Electrical Code, ANSI/NFPA No.70, provides information regarding proper grounding.

**12 VDC / 24 VAC power source:** This unit is intended to operate with a limited power source. The unit is intended to operate at either 12 VDC or 24 VAC (if PoE is not available). User supplied wiring must be in compliance with electrical codes (Class 2 power levels).

**PoE:** Use only approved PoE devices. Power-over-Ethernet can be connected at the same time as a 12 VDC or 24 VAC power supply.

If auxiliary power (12 VDC or 24 VAC) and PoE is applied simultaneously, the camera selects auxiliary input and shuts off the PoE.

# 1.4 FCC & ICES compliance

**FCC & ICES Information**

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to *part 15* of the *FCC Rules*. These limits are designed to provide reasonable protection against harmful interference in a **residential installation**. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna;
- increase the separation between the equipment and receiver;
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
- consult the dealer or an experienced radio/TV technician for help.

Intentional or unintentional modifications, not expressly approved by the party responsible for compliance, shall not be made. Any such modifications could void the user's authority to operate the equipment. If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: **How to Identify and Resolve Radio-TV Interference Problems**. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

## 1.5 MicroSD cards

Bosch Security systems recommends that local storage on microSD card should only be used for alarm recording and Automatic Network Replenishment (ANR) applications. To minimize the risk of loss of digital information, we recommend multiple, redundant recording systems, and a procedure to back up all digital information.

## 1.6 UL certification

**Disclaimer**

Underwriter Laboratories Inc. ("UL") has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested fire, shock and/or casualty hazards as outlined in ULs *Standard(s) for Safety for Information Technology Equipment, UL 60950-1*. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product.

UL MAKES NO REPRESENTATIONS, WARRANTIES, OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT.

| | |
|---|---|
| | **Disposal -** Your Bosch product was developed and manufactured with high-quality material and components that can be recycled and reused. This symbol means that electronic and electrical appliances, which have reached the end of their working life, must be collected and disposed of separately from household waste material. Separate collecting systems are usually in place for disused electronic and electrical products. Please dispose of these units at an environmentally compatible recycling facility, per *European Directive 2002/96/EC* |

## 1.7 Bosch notices

**Video loss**

Video loss is inherent to digital video recording; therefore, Bosch Security Systems cannot be held liable for any damage that results from missing video information. To minimize the risk of lost digital information, Bosch Security Systems recommends multiple, redundant recording systems, and a procedure to back up all analog and digital information.

**Optical elements**

Optical elements are sensitive and should be protected at all times. Do not allow objects to come into contact with glass surfaces and do not touch optical elements with your fingers.

**Copyright**

This manual is the intellectual property of Bosch Security Systems and is protected by copyright.
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**Trademarks**

All hardware and software product names used in this document are likely to be registered trademarks and must be treated accordingly.

**Note**

This manual has been compiled with great care and the information it contains has been thoroughly verified. The text was complete and correct at the time of printing. The ongoing development of the products may mean that the content of the user guide can change without notice. Bosch Security Systems accepts no liability for damage resulting directly or indirectly from faults, incompleteness or discrepancies between the user guide and the product described.

**More information**

For more information please contact the nearest Bosch Security Systems location or visit *www.boschsecurity.com*

## 1.8 Copyrights

The firmware uses the fonts "Adobe-Helvetica-Bold-R-Normal--24-240-75-75-P-138-ISO10646-1" and "Adobe-Helvetica-Bold-R-Normal--12-120-75-75-P-70-ISO10646-1" under the following copyright:
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Permission to use, copy, modify, distribute and sell this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notices appear in all copies and that both those copyright notices and this permission notice appear in supporting documentation, and that the names of Adobe Systems and Digital Equipment Corporation not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission.

This software is based in part on the work of the Independent JPEG Group.

# 2 Introduction

## 2.1 Features

The 720p HD IP Day/Night camera is a high-performance, surveillance color camera.
The camera uses H.264 compression technology to give clear images while reducing bandwidth and storage requirements. It is also ONVIF compliant to improve compatibility during system integration. The camera operates as a network video server and transmits video and control signals over data networks, such as Ethernet LANs and the Internet. The camera is easy to install and ready to use. Features include:

- Progressive scan 1/3-inch CMOS HD sensor
- Excellent low-light performance
- True Day/Night performance with switchable IR filter
- High performance lenses for HD resolution and extra DoF
- Multiple streams
- MicroSD card slot
- ONVIF conformant
- Two-way audio and audio alarm
- Alarm input and alarm output to external devices
- Pre-programmed operation modes
- Intelligent dynamic noise reduction
- Enhanced video motion detection
- Video and data transmission over IP data networks
- Multicast function
- Integrated Ethernet interface (10/100 Base-T)
- Power-over-Ethernet (PoE)
- Data interface RS485/RS422/RS232 for PTZ control
- Password protection
- Event-driven, automatic connection
- Integrated Web server for live viewing and configuration via a browser
- Firmware update through web browser

# 3 System Information

## 3.1 Overview of functions

The camera incorporates a network video server. Its primary function is to encode video and control data for transmission over an IP network. With its H.264 encoding, it is ideally suited for IP communication and for remote access to digital video recorders and IP systems. The use of existing networks means that integration with CCTV systems or local networks can be achieved quickly and easily. Video images from a single camera can be simultaneously received on several receivers.

### 3.1.1 Progressive scan

The camera captures and processes progressively scanned images. When there is fast motion in a scene, progressively scanned images are generally sharper than interlaced images.

### 3.1.2 True Day/Night function

In night mode, the camera enhances low light viewing by switching the IR (infrared) filter out of the optical path and providing a monochrome image. The camera can switch from color to monochrome mode automatically by sensing the illumination level, manually via the alarm input, or remotely via a web browser.

### 3.1.3 Multi-streaming

The innovative multi-streaming feature delivers variousH.264 streams together with an M.JPEG stream. Thesestreams facilitate bandwidth-efficient viewing andrecording as well as integration with third-party videomanagement systems.

### 3.1.4 ONVIF (Open Network Video Interface Forum)

The camera complies to the ONVIF standard which means that it is easier to install and integrate into larger systems. The ONVIF standard is a global standard for the interface of network video products.

### 3.1.5 Audio

Two-way duplex audio is available in the unit for live voice communications or audio recording.

### 3.1.6 Alarm I/O

The alarm input can be used to control the functionality of the unit. An alarm output can control external devices.

### 3.1.7 Tamper detection and motion detection

The camera offers a wide range of configuration options for alarm signaling in the event of tampering with the camera. A Motion+ algorithm for detecting movement in the video image is included.

### 3.1.8 Video encoding

The camera uses the H.264 compression standards. Thanks to efficient encoding, the data rate remains low even with high image quality and can also be adapted to local conditions within wide limits.

### 3.1.9 Multicast

In suitably configured networks, the multicast function enables simultaneous, real time transmission to multiple receivers. The prerequisite for this is that the UDP and IGMP V2/V3 protocols are implemented on the network.

### 3.1.10 Power-over-Ethernet

Power for the camera can be supplied via a Power-over-Ethernet compliant network cable connection. With this configuration, only a single cable connection is required to view, power, and control the camera.

### 3.1.11 Data interface

An external communications port with RS485/RS422/RS232 is available to provide data to external devices, such as pan and tilt heads, for full PTZ control via the Ethernet interface.

### 3.1.12 Encryption

The unit offers a variety of options for protection against unauthorized reading. Web browser connections can be protected using HTTPS. Protect the control channels via the SSL encryption protocol. With an additional license, the user data itself can be encrypted.

### 3.1.13 Recording

The camera can be used with an iSCSI server connected via the network to store long-term recordings, and with a local microSD card for shorter storage times and temporary recordings.

### 3.1.14 Configuration

The camera can be configured using a browser on the local network (Intranet) or from the Internet. Similarly, firmware updates and rapid loading of device configurations are also possible. Configuration settings can be stored as files on a computer and copied from one camera to another.

## 3.2 Operation with external systems

The camera can be used with a variety of Bosch systems:

– Bosch Video Management System
– Bosch Video Client
– Bosch Recording Station

When connected to any of these systems, many of the camera configuration parameters are controlled by the system and not by the settings made via a web browser.

**Bosch Video Management System**

The Bosch Video Management System is a unique enterprise IP video surveillance solution that provides seamless management of digital video, audio, and data across any IP network. It is designed to work with Bosch CCTV products as part of a total video surveillance management system.

**Bosch Video Client**

The camera video server and the Bosch Video Client software combine to provide a high-performance system solution. The Bosch Video Client is a Windows application for viewing, operating, controlling, and administering CCTV installations (such as surveillance systems) at remote locations.

**Bosch Recording Station**

The camera is also designed for use with the Bosch Recording Station. The Bosch Recording Station can record up to 64 video and audio streams. The Bosch Recording Station supports various functions of the camera, such as controlling relays, remote control of peripheral devices, and remote configuration. It can use alarm inputs to trigger actions and, when motion detection **Motion+** is active, can record the relevant cells, making intelligent motion detection possible.

# 4 Planning

## 4.1 Unpacking

Unpack carefully and handle the equipment with care. The packaging contains:

- DINION HD IP camera
- Sensor protection cap (mounted on camera)
- Power connector
- Alarm I/O connector
- Data connector
- Spare lens connector (male)
- Optical disk
  - Manual
  - Bosch Video Client
- Quick install instructions and safety instructions

If equipment has been damaged during shipment, repack it in the original packaging and notify the shipping agent or supplier.

## 4.2 System requirements

- Computer with Windows XP/Vista/7 operating system, network access, and Microsoft Internet Explorer web browser version 9

  **-or-**
- Computer with network access and reception software, for example Bosch Video Client, Bosch Video Management System, or Bosch Recording Station

# 5 Installation

**CAUTION!**
Installation should only be performed by qualified service personnel in accordance with the National Electrical Code or applicable local codes.

## 5.1 Lens mounting

The camera accepts CS or C-mount lenses. DC-iris lenses are recommended for best performance. The camera automatically detects the type of lens and optimizes performance accordingly. A spare male lens connector is provided.

**CAUTION!**
Lenses weighing more than 0.5 kg (1.1lbs) must be separately supported.

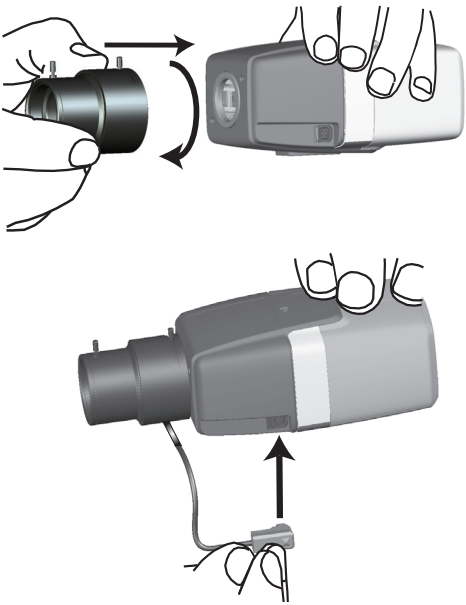
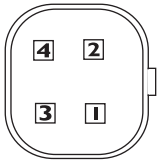


**Figure 5.1** Mounting a lens

| Pin | DC iris lens |
|---|---|
| 1 | Damp - |
| 2 | Damp + |
| 3 | Drive + |
| 4 | Drive - |




**Note**

If a short circuit is detected on the lens connector, the lens circuit is automatically disabled to avoid internal damage. Remove the lens connector and check the pin connections.

## 5.2 Mounting the camera

The camera can be mounted either from the top or from the bottom (1/4" 20 UNC thread).

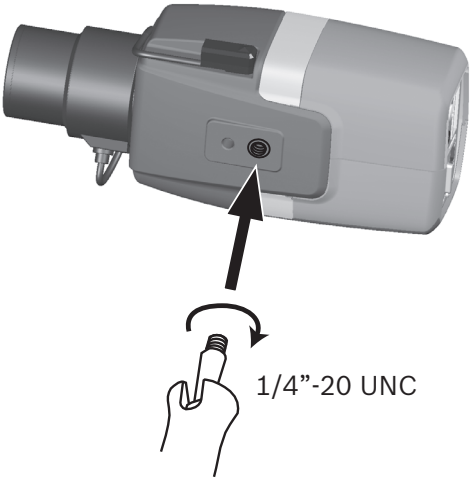



**Figure 5.2** Mounting a camera

**CAUTION!**
Do not expose the image sensors to direct sunlight.
Do not obstruct the free flow of air around the camera.

## 5.3 Network (and power) connector

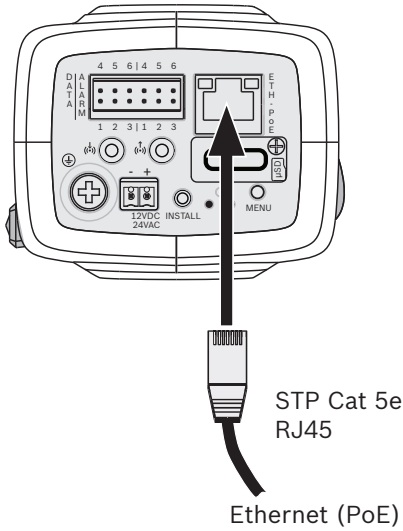



**Figure 5.3** Network connection

– Connect the camera to a 10/100 Base-T network.
– Use STP Category 5e cable with RJ45 connectors (the camera network socket is Auto MDIX compliant).
– Power can be supplied to the camera via the Ethernet cable compliant with the Power-over-Ethernet (IEEE 802.3af) standard.

The LEDs beside the Ethernet connection indicate Power (red), IP connection (green) and IP traffic (green flashing). They can be disabled in the **Installer** menu.

Power is supplied to the camera via the Ethernet cable, compliant with the Power-over-Ethernet standard.

# 5.4 Power connector

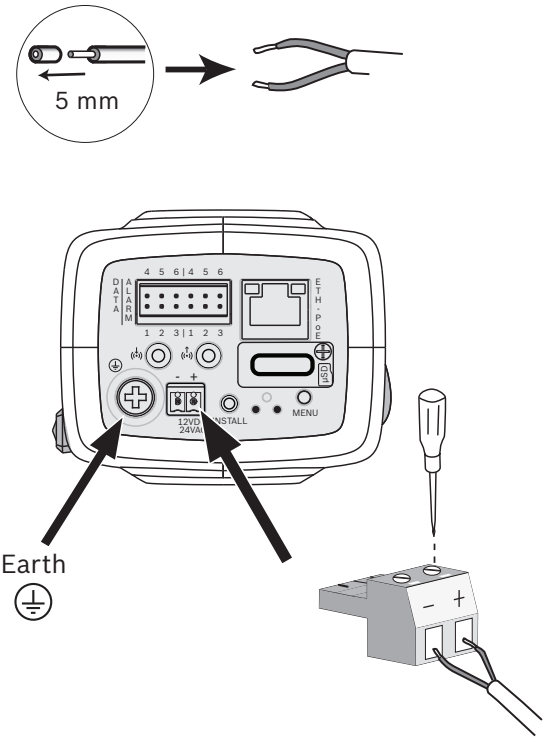



**Figure 5.4** Power connection

Connect a SELV-LPS or a SELV Class 2 power supply with a rated supply voltage of 24 VAC or 12 VDC as follows:

- Use AWG16 to 22 stranded wire or AWG16 to 26 solid wire; cut back 5 mm (0.2 in) of insulation.
- Connect the earth terminal of the camera ⏚ to the system earth of the installation to ensure correct safety and EMC/RFI protection.
- Loosen the screws of the supplied 2-pole connector and insert the wires.
- Tighten the screws and insert the 2-pole connector into the power socket of the camera.

## 5.5 Alarm and relay connector

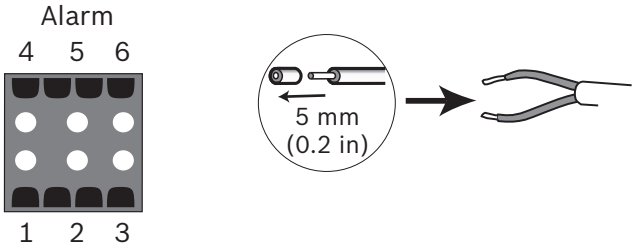



**Figure 5.5** Alarm and relay connector pins

| Pin | Alarm socket |
|---|---|
| 1 | Alarm in 1 |
| 2 | Alarm in 2 |
| 3 | Relay out contact 1 |
| 4 | Ground |
| 5 | Ground |
| 6 | Relay out contact 2 |

- Max. wire diameter AWG 22-28 for both stranded and solid; cut back 5 mm (0.2 in) of insulation.
- Alarm output relay switching capability: Max voltage 30VAC or +40 VDC. Max 0.5 A continuous, 10 VA.
- Alarm in: TTL logic, +5V nominal, +40 VDC max, DC coupled with 22 kOhm pull-up to +3.3 V.
- Alarm in: configurable as active low or active high.
- Max. 42 V allowed between camera ground and each of the relay pins.

Use the alarm input to connect external alarm devices such as door contacts or sensors. A zero potential make-contact or switch can be used as the actuator (use a bounce-free contact system).

Use the alarm relay output for switching external devices such as lamps or sirens.

# 5.6 Audio connectors

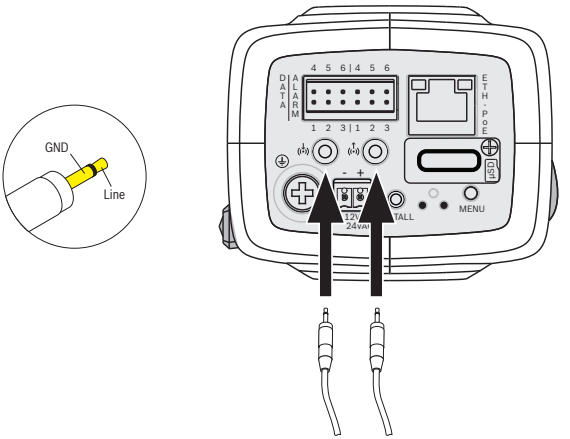



**Figure 5.6** Audio connectors

Connect audio devices to the **Audio In** and **Audio Out** connectors.

The unit has full-duplex mono audio. The two-way communication can be used to connect a speaker or door intercom system. The audio input signal is transmitted in sync. with the video signal.

**Audio input**: Line input level (not suitable for direct microphone signal); impedance 12 kOhm typical; 1 Vrms maximum input voltage.
**Audio output**: Line output level (not suitable for direct speaker connection); impedance 1.5 kOhm minimum; 1 Vrms maximum output voltage.
**Wiring:** Shielded audio connection cable is advised. Observe maximum cable lengths for audio line input and output levels.

# 5.7 Local storage

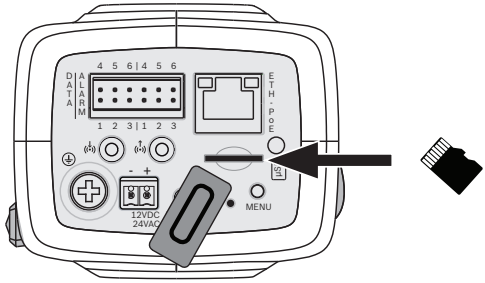



**Figure 5.7** Inserting an microSD card

1. Unscrew the card slot cover.
2. Slide the microSD card into the slot until it locks in place.
3. Screw the cover into place to seal the slot.

# 5.8 Video service monitor connector

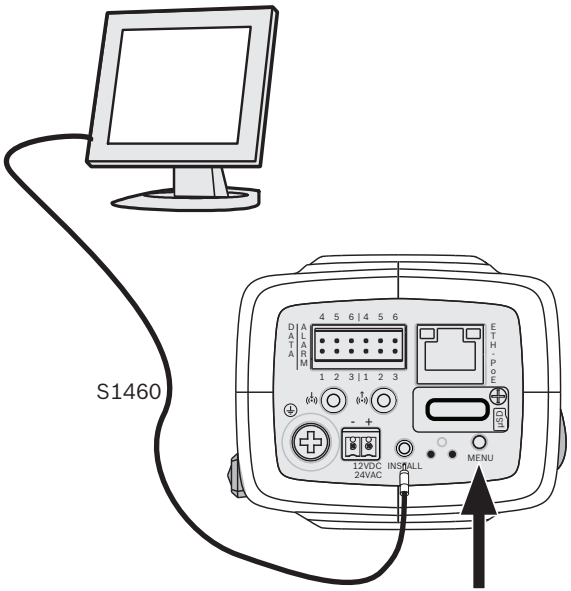



**Figure 5.8** Video service monitor connector

1. Connect a service monitor to the composite video connector (INSTALL) to aid installation (cable S1460).

## 5.9 Data connector

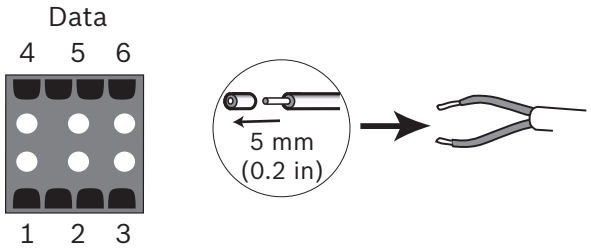



**Figure 5.9** Data connector pins

| Pin | Data socket |
|---|---|
| 1 | Ground |
| 2 | RxD / Rx+ |
| 3 | CTS / Rx- |
| 4 | Ground |
| 5 | TxD / Tx- |
| 6 | RTS / Tx+ |

The data connector is used to connect the control data coming out of the camera to external devices. RS485, RS422, and RS232 is supported by this data connection.

**Note:**
To ensure surge and electrostatic protection, keep the cable length between the camera and external device to less than 3 meters.

# 6 Install Wizard

## 6.1 Using the camera install wizard

The **Menu** button on the rear panel is used for accessing the camera install wizard. When there is a choice in the wizard, the options are selected by either a short press or a longer press of the button.

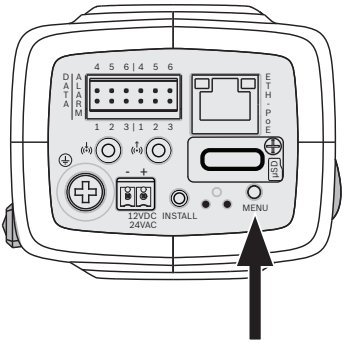



**Figure 6.1** Menu button

The wizard handles the following functions:

- Lens identification
- Zoom and focus adjustment conditions
- Image orientation
- Auto back focus

Run the wizard to adjust the focus. This optimizes picture sharpness in both bright and low-level lighting (for example, at night).

### 6.1.1 Adjustment procedure

A monitor must be connected to the video service connector to use the wizard. (After power-up, wait 20 seconds before attempting to open the install wizard.)

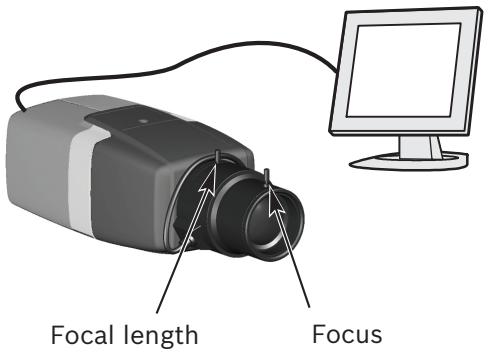
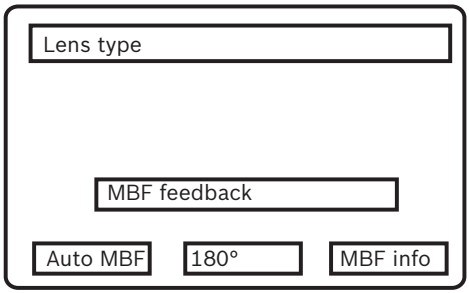



**Figure 6.2** Lens adjustment

1. Briefly press the **Menu** button to start the wizard.
   – You see the following on the monitor screen:




   – The lens type is identified and shown on the screen.
   – The iris is opened to its maximum value.
2. Manually adjust the focal length on the lens to obtain the required field of view.
3. Manually adjust the focus on the lens to obtain the sharpest image possible.
4. To rotate the image 180°, press and hold the **Menu** button until the image flips.

5. Briefly press the **Menu** button to start the automatic motorized (Auto MBF) back focus adjustment.
   – You will hear the motorized automatic back focus process running.
   – The progress is shown on the monitor.
6. If the camera is not correctly focussed, press the **Menu** button for a longer time to restart the wizard.
7. If the camera is correctly focussed, briefly press the **Menu** button.
   – The back focus position is stored.
   – The iris is set to its original value.

# 7 Camera configuration

The camera normally provides an optimal picture without the need for further adjustments. Configuration of the camera is carried out via the network using a web browser. The camera has a set-up menu in which basic installation settings (lens wizard, IP address) can be accessed. To view this menu, connect a laptop to the network connection of the camera.

## 7.1 Reset button

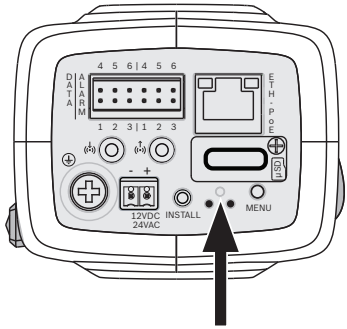



**Figure 7.1** Reset button

With the power on, use a small pointed object to press and hold the reset button for more than 10 seconds to restore the factory defaults. This is useful to restore the default IP address or to restore a previous version of the firmware if uploading a new version fails.

## 7.2 User modes

The camera has six user modes. These are selected via the web browser interface. The default mode is **Outdoor**.

## 7.3 True Day/Night switching

The camera is equipped with a motorized IR filter. The mechanical IR filter is taken out of the optical path in low-light applications.
The IR filter is controlled either:

– via an alarm input, or
– automatically, based on the observed light levels.

If **Auto** switching mode is selected, the camera automatically switches the filter depending on the observed light level. The switching level is programmable.

**Note:**
When the auto mode is selected and the switching level is set to -15, certain borderline scene lighting conditions can cause the camera to switch back and forth between day and night modes. Set a different switching level to avoid this.

# 8 Browser connection

A computer with Microsoft Internet Explorer can be used to receive live images from the camera, control the camera, and replay stored sequences. The camera is configured over the network using the browser.
The configuration options using the menu system of the camera itself are limited to setting up the lens and network.

**Note:**
The camera can also be configured using the supplied Bosch Video Client or the Bosch Video Management System.

## 8.1 Protected network

If a RADIUS server is used for network access control (802.1x authentication), the camera must be configured first. To configure the camera for a Radius network, connect it directly to a PC via a crossed network cable and configure the two parameters, **Identity** and **Password**. Only after these have been configured can communication with the camera via the network occur.

# 9 Troubleshooting

## 9.1 Function test

The camera offers a variety of configuration options. Therefore, check that it works properly after installation and configuration. This is the only way to ensure that the camera will function as intended in the event of an alarm.

Your check should include the following functions:

– Can you connect to the camera remotely
– Does the camera transmit all the data required?
– Does the camera respond as desired to alarm events?
– Is it possible to control peripheral devices, if necessary?

## 9.2 Resolving problems

The following table is intended to help identify the causes of malfunctions and correct them where possible.

| Malfunction | Possible causes | Solution |
|---|---|---|
| No image transmission to remote location. | Defective camera. | Connect a local monitor to the camera and check the camera function. |
| | Faulty cable connections. | Check all cables, plugs, contacts and connections. |
| | Incorrect encoder stream property set for connection to hardware decoder. | Select the H.264 MP SD option on the **Encoder Streams** configuration page. |
| No connection established, no image transmission. | The unit's configuration. | Check all configuration parameters. |
| | Faulty installation. | Check all cables, plugs, contacts and connections. |
| | Wrong IP address. | Check the IP addresses (terminal program). |
| | Faulty data transmission within the LAN. | Check the data transmission with ping. |
| | The maximum number of connections has been reached. | Wait until there is a free connection and call the transmitter again. |

| Malfunction | Possible causes | Solution |
|---|---|---|
| No audio transmission to remote station. | Hardware fault. | Check that all connected audio units are operating correctly. |
| | Faulty cable connections. | Check all cables, plugs, contacts and connections. |
| | Incorrect configuration. | Check audio parameters on the **Audio** configuration and **LIVEPAGE Functions** pages. |
| | The audio voice connection is already in use by another receiver. | Wait until the connection is free and then call the sender again. |
| The unit does not report an alarm. | Alarm source is not selected. | Select possible alarm sources on the Alarm sources configuration page. |
| | No alarm response specified. | Specify the desired alarm response on the Alarm connections configuration page; if necessary change the IP address. |
| Control of cameras or other units is not possible. | The cable connection between the serial interface and the connected unit is not correct. | Check all cable connections and ensure all plugs are properly fitted. |
| | The interface parameters do not match those of the other unit connected. | Make sure that the settings of all units involved are compatible. |

| Malfunction | Possible causes | Solution |
|---|---|---|
| The unit is not operational after a firmware upload. | Power failure during programming by firmware file. | Have the unit checked by Customer Service and replace if necessary. |
| | Incorrect firmware file. | Enter the IP address of the unit followed by **/ main.htm** in your Web browser and repeat the upload. |
| Placeholder with a red cross instead of the ActiveX components. | JVM not installed on your computer or not activated. | Install Sun JVM from the product optical disk. |
| Web browser contains empty fields. | Active proxy server in network. | Create a rule in the local computer's proxy settings to exclude local IP addresses. |
| The **POWER** LED flashes red. | Firmware upload failed. | Repeat firmware upload. |

## 9.3 Customer service

If a fault cannot be resolved, please contact your supplier or system integrator, or go directly to Bosch Security Systems Customer Service.

The version numbers of the internal firmware can be viewed on a special page. Please note this information before contacting Customer Service.

1. In the address bar of your browser, after the unit IP address, enter: `/version`
   for example: `192.168.0.80/version`
2. Write down the information or print out the page.

# 10 Maintenance

## 10.1 Testing the network connection

The ping command can be used to check the connection between two IP addresses. This allows testing whether a device is active in the network.

1. Open the DOS command prompt.
2. Type ping followed by the IP address of the device.

If the device is found, the response appears as " Reply from ... ", followed by the number of bytes sent and the transmission time in milliseconds. Otherwise, the device cannot be accessed via the network. This might be because:

– The device is not properly connected to the network. Check the cable connections in this case.
– The device is not correctly integrated into the network. Check the IP address, subnet mask, and gateway address.

## 10.2 Communication with Terminal Program

**Data Terminal**

If a camera cannot be found in the network or the connection to the network is interrupted, you can connect a data terminal to the camera for initial setup and for setting important parameters. The data terminal consists of a computer with a terminal program.

You require a serial transmission cable with a 9-pin Sub-D plug to connect to the computer.

The communications accessory included with Windows can be used as the terminal program.

1. Disconnect the camera from the Ethernet network before working with the terminal program.
2. Connect the serial interface of the camera using any available serial interface on the computer.

**Configuring the Terminal**

Before the terminal program can communicate with the camera, the transmission parameters must be matched. Make the following settings for the terminal program:

– 19,200 bps
– 8 data bits
– No parity check
– 1 stop bit
– No protocol

**Command Inputs**

After the connection has been established, you must log on to the camera to access the main menu. Other submenus and functions can be accessed using the on-screen commands.

1. If necessary, turn off the local echo so that entered values are not repeated on the display.
2. Enter one command at a time.
3. When you have entered a value, such as the IP address, check the characters you have entered before pressing Enter to transfer the values to the camera.

**Assigning an IP Address**

To assign an IP address that is valid for your network.

1. Start a terminal program such as HyperTerminal.
2. Enter the user name **service**. The terminal program displays the main menu.
3. Enter command **1** to open the **IP** menu.
4. Enter **1** again. The terminal program displays the current IP address and prompts you to enter a new IP address.
5. Enter the desired IP address and press Enter. The terminal program displays the new IP address.
6. Use the displayed commands for any additional settings you require.

**Note:**

You must reboot to activate the new IP address, a new subnet mask or a gateway IP address.

**Reboot**

Briefly interrupt the power supply to the camera for a reboot (disconnect the power supply unit from the mains supply and switch on again after a few seconds).

**Additional Parameters**

You can use the terminal program to check other basic parameters and modify them where necessary. Use the on-screen commands in the various submenus to do this.

## 10.3 Repairs

**CAUTION!**

Never open the casing of the unit. The unit does not contain any user serviceable parts. Ensure that all maintenance or repair work is performed only by qualified personnel (electrical engineering or network technology specialists). In case of doubt, contact your dealer's technical service center.

### 10.3.1 Transfer and disposal

The camera should only be passed on together with this installation guide. The unit contains environmentally hazardous materials that must be disposed of according to law. Defective or superfluous devices and parts should be disposed of professionally or taken to your local collection point for hazardous materials.

# 11 Technical Data

## 11.1 Specifications

| | |
|---|---|
| Imager | 1/3-inch CMOS HD sensor |
| Image resolution | 1280 × 720 pixels |
| Rated supply voltage | 12 VDC, 600 mA<br>24 VAC, 500 mA, 50/60 Hz<br>PoE 48 VDC, 175 mA |
| Minimum illumination<br>30 IRE, F1.4, 30 ips | 0.017 lx color<br>0.0057_lx Mono |
| Day/Night | Color, Mono (IR contrast), Auto |
| Dynamic range | > 84 dB |
| SNR | > 50 dB |
| BLC | Off/Auto/Intelligent |
| White Balance | ATW, AWB hold and manual (2500 to 10000K) |
| Color saturation | Adjustable from monochrome (0%) to 133% color |
| Shutter | Automatic Electronic Shutter (AES)<br>Fixed (1/30 [1/25] to 1/150000) selectable |
| SensUp | Adjustable from Off to 16x |
| AutoBlack | Automatic continuous |
| Intelligent DNR | Temporal and spatial noise filtering |
| Sharpness | Sharpness enhancement |
| Privacy Masking | Four independent areas, fully programmable |
| Video Motion Analysis | Motion+, IVA |
| Lens type | Manual or DC iris, auto detect |
| Controls | Via web browser or Configuration Manager |
| Control feedback | Actual shutter, Actual gain |
| User modes | 6 pre-defined customizable user modes |
| LAN interface | STP, Ethernet 10/100 Base-T, auto-sensing,<br>half/full duplex, RJ-45 |
| Video encoding protocols | H.264 (ISO/IEC 14496-10), M-JPEG |

| | |
|---|---|
| Stream (max.) | 720p50/60 |
| Group of pictures | IP, IBP, IBBP |
| Network protocols | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP, IGMPV2/V3, ICMP, RTSP, FTP, Telnet, ARP, DHCP, SNTP,SNMP (V1, MIB-II), 802.1x, SMTP, iSCSI, UPnP (SSDP) |
| Encryption | TLS 1.0, SSL, AES (optional) |
| | |
| Alarm input (2) | Non-isolated closing contact<br>TTL logic, +5V nominal, +40 VDC max, DC coupled with 22 kOhm pull-up to +3.3 VDC |
| Relay output (1) | Maximum voltage 30 VAC or +40 VDC.<br>Maximum 0.5 A continuous, 10 VA |
| Audio input | 1 Vrms, impedance 12 kOhm |
| Audio output | 1 Vrms, impedance 1.5 kOhm |
| Audio standards | AAC<br>G.711, 8kHz sampling rate<br>L16, 16kHz sampling rate |
| Audio signal-to-noise ratio | > 50 dB |
| Data port | RS-232/422/485 |
| Memory card slot | Supports up to 2 TB microSD cards |
| Lens mount | CS compatible, C-mount compatible with adapter ring |
| Tripod mount | Bottom and top 1/4" 20 UNC |
| Dimensions (H x W L) without lens | 78 x 66 x 140 mm (3.07 x 2.6 x 5.52 in) |
| Weight without lens | 690 g (1.52 lb) |
| Operating temperature | -20 °C to +50 °C (-4 °F to +122 °F)<br>Non-IVA: -20 °C to +55 °C (-4 °F to +131 °F) |

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